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Makoto Ouchi

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EXAMINER

VANCHY JR, MICHAEL J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,650

Applicant(s)

OUCHI ET AL.

Examiner

Michael Vanchy Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01/26/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 9 objected to because of the following informalities: The examiner believes that it would be best to omit pixel pitch from claim 9 since it is confusing because when pixel pitch is decreased it is well known in the art that the image sharpness and resolution increases. This is the opposite of the desired meaning of the claim. It is noted that the specification states that the pixel pitch is a decrease in pixels, however correction still seems appropriate.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-5, 7-8, 10-15, and 27-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Burt et al. 5,649,032.**

Re claim 1, method for generating a panorama image from a plurality of original images that include an image in common (Burt, Fig. 2A-C, col. 17, lines 26-37, and claim 1 “A system for automatically generating a mosaic from a single sequence of images comprising: means for automatically aligning image information in each of said

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images in said single sequence of images with common image information...”), the method comprising the steps of:

- (a) generating from each of the original images a low-resolution image having lower resolution than the original image (Burt col. 7 line 65, “*the lowest resolution level is selected in both image pyramids...*”);
- (b) identifying a condition of overlap for the low-resolution images which is to be identified based on areas for the image in common, in order to determine a feasible area in which the panorama image may be generated (Burt, Fig. 2A-C, col. 17, lines 26-37, and col. 8 lines 12-14, “At step 406 an area (e.g., 3 by 3 pixels) is selected from the selected resolution level of the pyramid for the input image.”);
- (c) determining within the feasible area an area extending beyond an area of any one of the low-resolution images, as an image generation area for generating the panorama image (Burt, Fig. 2A-C, Fig. 5, items “500, 502, and 508”); and
- (d) generating from the plurality of original images a panorama image having an area corresponding to the image generation area (Burt, Fig. 2A-C, Fig. 5, items “500, 502, and 508”).

Re claim 2, image generating method for generating a composite image from a plurality of original images (Burt, Fig. 2A-C, col. 17, lines 26-37), the method comprising: determining a plurality of partial original images for inclusion in the composite image to be generated, and included in any of the plurality of original images (Burt, Fig. 2A-C, col. 17, lines 26-37); and performing a predetermined process for generating the composite image on a predetermined processing area of the original

image that includes the partial original image (Burt, Fig. 2A-C, col. 17, lines 26-37); without performing the process on portions outside the processing area, to generate the composite image based on the plurality of partial original images (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 3, image generating method according to claim 2 wherein the processing area includes: an area included within the original image and within a range of predetermined distance from the perimeter of the partial image, and the area of the partial original image (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 4, image generating method according to claim 2 wherein the processing area is equivalent to the area of the partial original image (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 5, image generating method according to claim 4 wherein the composite image has higher density of pixels making up the image than does the low-resolution image (Burt, Fig. 4, item "416" and col. 6, lines 26-45), and an area extending beyond an area of any one of the original images (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Although Burt is silent on "higher density of pixels" however does mention changing the resolution of the input image to a resolution of the mosaic. The examiner takes into account that a higher resolution results in a "higher density of pixels." Thus, increasing the resolution is increasing the density of pixels.

Re claim 7, image generating method according to claim 4 wherein the plurality of original images mutually include portions recording a same given subject (Burt, Fig.

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2A-C, col. 17, lines 26-37), and the step of determining partial original images comprises the steps of:

- (a) performing resolution conversion for the plurality of original images, to generate a plurality of low-resolution images of resolution lower than the original images (Burt col. 7 line 65, *"the lowest resolution level is selected in both image pyramids..."*);
- (b) based on portions in the low-resolution image recording the same given subject, determining from areas of the plurality of low-resolution images a composite area equivalent to the sum of the areas of the low-resolution images (Burt Fig. 2A-C);
- (c) determining within the composite area an image generation area extending beyond an area of any one of the low-resolution images (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508"); and
- (d) determining, as the partial original images, portions of the original images corresponding to low-resolution partial images which are portions of the low-resolution images and included in the image generation area (Burt Fig. 4, and Fig. 9).

Re claim 8, image generating method according to claim 7 wherein the partial original image, when subjected to conversion of the resolution, is to generate an image equivalent to one of the low-resolution partial images, and the step (d) comprises the step of determining the partial original image based on relationship between the low resolution partial image and the low resolution image, on and the plurality of original images (Burt, Fig. 4, item "404" and col. 6, lines 26-45).

Re claim 10, image generating method according to claim 7 wherein the step (b) comprises the step of

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(b1) based on the portions recording the same given subject, calculating relative positions of the plurality of low-resolution images (Burt, Fig. 4, item "414"), and the step (c) comprises the steps of

(c1) displaying as the composite area on a display unit (Burt Fig. 1, item "104") the plurality of low-resolution images according to the relative positions thereof (Burt Fig. 7, col. 12 line 44 to col. 13 line 9),

(c2) provisionally establishing the image generation area (Burt Fig. 5, items "504, 508 and 506 and 510" and Fig. 9 item "904");

(c3) displaying on the display unit (Burt Fig. 1, item "104") the provisionally established image generation area, shown superimposed on the plurality of low-resolution images (Burt Fig. 5 items "508 and 510");

(c4) resetting the image generation area (Burt Fig. 5, item "520"); and

(c5) determining the reset image generation area as the image generation area (Burt Fig. 5, items "520 and 524").

Re claim 11, image generating method according to claim 10 wherein the step (b1) comprises the steps of: (b2) receiving user instruction in regard to general relative position of the plurality of low-resolution images; and (b3) based on relative position instructed by the user, calculating relative position of the plurality of low-resolution images so that deviation among the portions thereof recording the same given subject is within a predetermined range (Burt, Fig. 5, and col. 10, lines 59-67).

Re claim 12, image generating method according to claim 11 wherein the step (b2) comprises the step of displaying on a display unit (Burt Fig. 1, item "104") at least

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two of the low-resolution images, and the instruction regarding general relative position of the plurality of low-resolution images is accomplished at least in part by the user moving one of the two low-resolution images displayed on the display unit, onto the other low-resolution image so that they partially overlap (Burt Fig. 7, col. 12 line 44 to col. 13 line 9).

Re claim 13, image generating method according to claim 11 wherein the step (b2) comprises the step of receiving, by way of instruction in regard to the relative position of the plurality of low-resolution images, instruction relating to sequential order of the plurality of low-resolution images in a predetermined direction, and the step (b1) further comprises (b4) a step of determining the relative position of the plurality of low-resolution images according to the sequential order (Burt, Fig. 2A-C, and col. 16 lines 1-10).

Re claim 14, image generating device (Burt, Abstract, "*system for automatically generating...*") for generating a panorama image from a plurality of original images that include an image in common (Burt, Fig. 2A-C, col. 17, lines 26-37, and claim 1 "*A system for automatically generating a mosaic from a single sequence of images comprising: means for automatically aligning image information in each of said images in said single sequence of images with common image information...*"), comprising: a low-resolution image generating unit configured to generate from each of the original images a low-resolution image having lower resolution than the original image (Burt col. 7 line 65, "*the lowest resolution level is selected in both image pyramids...*"); a feasible area determining unit configured to identify a condition overlap for the low-resolution

images which is to be identified based on areas for the image in common, in order to determine a feasible area in which the panorama image may be generated (Burt, Fig. 2A-C, col. 17, lines 26-37, and col. 8 lines 12-14, "At step 406 an area (e.g., 3 by 3 pixels) is selected from the selected resolution level of the pyramid for the input image."); a generation area determining unit configured to determine within the feasible area an area extending beyond an area of any one of the low-resolution images, as an image generation area for generating the panorama image (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508"); and an extended image generating unit configured to generate from the plurality of original images a panorama image having an area corresponding to the image generation area (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 15, image generating device (Burt, Abstract, "*system for automatically generating...*") for generating a composite image from a plurality of original images, wherein the device determines a plurality of partial original images for inclusion in the composite image to be generated, and included in any of the plurality of original images (Burt, Fig. 2A-C, col. 17, lines 26-37); and performs a predetermined process for generating the composite image on a predetermined processing area of the original image that includes the partial original image (Burt, Fig. 2A-C, col. 17, lines 26-37), without performing the process on portions outside the processing area, to generate the composite image based on the plurality of partial original images (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 27, computer program product (Burt, col. 1 lines 15-36) for generating a panorama image from a plurality of original images that include an image in common (Burt, Fig. 2A-C, col. 17, lines 26-37, and claim 1 "*A system for automatically generating a mosaic from a single sequence of images comprising: means for automatically aligning image information in each of said images in said single sequence of images with common image information...*"), the computer program product comprising: a computer-readable medium; and a computer program recorded onto the computer-readable medium (Burt, col. 1 lines 15-36); wherein the computer program comprises: a portion for generating from each of the original images a low-resolution image having lower resolution than the original image (Burt col. 7 line 65, "*the lowest resolution level is selected in both image pyramids...*"); a portion for identifying a condition of overlap for the low-resolution images which is to be identified based on areas for the image in common, in order to determine a feasible area in which the panorama image may be generated (Burt, Fig. 2A-C, col. 17, lines 26-37, and col. 8 lines 12-14, "At step 406 an area (e.g., 3 by 3 pixels) is selected from the selected resolution level of the pyramid for the input image."); a portion for determining within the feasible area an area extending beyond an area of any one of the low-resolution images, as an image generation area for generating the panorama image (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508"); and a portion for generating from the plurality of original images a panorama image having an area corresponding to the image generation area (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Re claim 28, computer program product (Burt, col. 1 lines 15-36) for generating a composite image from a plurality of original images (Burt, Fig. 2A-C, col. 17, lines 26-37), the computer program product comprising: a computer-readable medium; and a computer program recorded onto the computer-readable medium (Burt, col. 1 lines 15-36); wherein the computer program comprises: a first portion for determining a plurality of partial original images for inclusion in the composite image to be generated, and included in any of the plurality of original images (Burt, Fig. 2A-C, col. 17, lines 26-37); and a second portion for performing a predetermined process for generating the composite image on a predetermined processing area of the original image that includes the partial original image (Burt, Fig. 2A-C, col. 17, lines 26-37), without performing the process on portions outside the processing area, to generate the composite image based on the plurality of partial original images (Burt, Fig. 2A-C, Fig. 5, items "500, 502, and 508").

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burt et al., 5,649,032 as applied to claim 4 above, and further in view of Katayama et al., 5,982,951.

Both Burt and Katayama teach creating an image from a plurality of images. Although, Burt is silent on calculating pixel tone values Katayama et al. teaches an image combine apparatus which has a tone correction area.

Re claim 6, image generating method according to claim 4 wherein the predetermined process for generating the composite image calculates pixel tone values, and the step of generating the composite image comprises the step of calculating the tone value of each pixel making up the composite image, based on the tone value of each pixel making up the plurality of partial original images, without calculating tone values of pixels not included in the composite image (Katayama et al., Abstract, col. 2, lines 35-41, col. 8, lines 45-49, and col. 13, lines 27-33).

Taking the combined teachings of Burt and Katayama as a whole it would have been obvious to include using tone values in the creation of an image from a plurality of images.

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6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burt et al., 5,649,032 as applied to claim 4 above, and further in view of Manickam et al., 6,067,384.

Burt is silent on reducing the "pixel pitch" or amount of pixels in the original image to form a low-resolution image by 30%-80%. However, Manickam does state a method for reducing an original image's resolution by 37.5%, 50%, and 75% all that are within the range specified in the claim.

Re claim 9, image generating method according to claim 7 wherein the low-resolution image has a pixel pitch that is 30%-80% of a pixel pitch of the original image (Manickam et al., col. 6 lines 32-35).

Taking the combined teachings of Burt and Manickam it would be obvious to include a method that decreases the "pixel pitch" or amount of pixels of an original image by 30%-80%, since this technique is well known in the art and results in the same outcome as the above mentioned claim.

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that

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would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Vanchy Jr. whose telephone number is (571) 270-1193. The examiner can normally be reached on Monday - Friday 7:30 am - 5:00 pm Alt. Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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